TREATMENT BY GENERATOR

TREATMENT-SPECIFIC GUIDANCE:

Evaporation

Ecology Fact Sheet *Publication Number 96-414, Revised December 2002*

This document may be used by generators interested in treating their own waste by evaporation, on-site, in accumulation tanks or containers. Generators of hazardous waste who comply with these standards, and the standards in Technical Information Memorandum (TIM) #96-412, *Treatment by Generator*, will meet the requirements of the *Dangerous Waste Regulations*, Chapter 173-303 WAC.

This Fact Sheet provides guidance only for treatment by generator. If treatment is done according to this guidance document, a permit or other written approval is not necessary.

Description and Definitions

Evaporators are gaining popularity in some businesses. In many cases, these units effectively remove water from certain waste streams, reducing the weight and volume of the waste.

Evaporation is the vaporization of a liquid from a solution or slurry. It is applicable to liquids, slurries and sludges. These materials may contain liquids, or suspended or dissolved solids, that are virtually non-volatile. After the liquid portion of the waste is evaporated, the waste volume is obviously reduced. Only the remaining residue is left for disposal as hazardous waste.

There are three types of evaporations:

- Natural evaporators: evaporation is caused by natural phenomena, such as solar energy or diffusion.
- Direct contact evaporators: evaporation is caused when the heating source is in contact with the liquid.
- Indirect evaporators: evaporation that conducts heat through physical barriers to the liquid.

Applicability

Evaporation is appropriate for concentrating certain inorganic wastes, such as acidic solutions with heavy metals. Wastes containing organic constituents, such as methylene chloride, are not appropriate for use in an evaporation system unless all vapors are "captured" and there are no releases to the air (except if allowed by state or local authorities).

If the department determines that the treatment process poses a threat to public health or the environment, the generator may be required to obtain a treatment permit. If the treatment is part of a wastewater treatment operation [regulated by Permit by Rule (PBR)], or the waste is being treated to meet Land Disposal Restriction (LDR) standards, please see "Other Regulatory Requirements," below.

This document is intended solely as guidance. It addresses only the requirements of the *Dangerous Waste Regulations*. The generator is still ultimately responsible for complying with all applicable federal, state and local requirements relating to on-site waste management. Based on the analysis of specific site circumstances, Ecology officials may require a generator to manage their waste in a manner other than as specified in this guidance. Ecology may also revise this Fact Sheet at any time.

Criteria

The following criteria apply in addition to the guidance in TIM #96-412:

Evaporator units designed to remove water from virtually non-volatile wastes are an allowable technology, if they meet the following conditions:

1) Only inorganic wastes mixed with water should be treated in an evaporator. Inorganic wastes that could be treated in an evaporator include spent caustics, rinsewaters, and water-based machining coolants.

2) Do not treat organic solutions such as solvents, paints or oils in an evaporator unless all vapors are "captured" and there are no releases to the air (except if allowed by state or local authorities).

3) Leave some water content in the remaining sludge so that you don't "overcook" evaporator wastes.

4) Designate and dispose of remaining sludge properly; it will typically be hazardous.

5) Incorporate secondary containment around the evaporator to catch a spill.

Recommendation

You may want to condense your evaporator steam and reuse it in your caustic or rinsewater tanks.

Other Regulatory Requirements

More detailed information on this guidance, or other mechanisms for treatment by generator if this guidance does not apply, is found in Technical Information Memorandum (TIM) #96-412, *Treatment by Generator*. Generators must assure compliance with all applicable sections of the *Dangerous Waste Regulations*, Chapter 173-303 WAC, such as proper designation of waste(s); accumulation, handling and labeling standards; reporting standards; spills and discharge requirements; etc. Information on appropriate permit by rule and LDR requirements may be found in the TIM. In addition, the generator must comply with all other applicable federal, state, and local regulations.

Case Example

Machine shops generate large amounts of waste water mixed with spent caustic solutions that test hazardous for lead and corrosivity. By using an evaporator these shops can reduce the quantity of their waste in an environmentally safe manner.

Ecology Assistance

For more information please contact a hazardous waste specialist at one of the following Ecology offices:

Northwest Regional Office	425-649-7000
Southwest Regional Office	360-407-6300
Central Regional Office	509-575-2490
Eastern Regional Office	509-329-3400
Industrial Section	360-407-6916
Nuclear Waste	360-407-7100

Ecology is an equal opportunity agency. If you have special accommodation needs, or require this document in an alternate format, please call the Hazardous Waste and Toxics Reduction Program at (360) 407-6700 (Voice) or 711 or (800) 833-6388 (TTY).

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